

(5) Color difference changes in red PP sheet  
Sample: Red PP sheet, 0.8 mm in thickness.  
Reference color:  $Y=13.94$ ,  $X=0.4989$ ,  $y=0.3173$ .  
Results: Given in FIG. 7 and Table 6.

FIG. 7 reveals that the tester of the invention attained less acceleration than the prior-art tester but exhibited nearly the same tendency as the outdoor weathering.

TABLE 6

$\Delta E$	Prior-art tester (hr)	Outdoor exposure (month)	Tester of invention (hr)	Acceleration ratio (times)
3.0	25	3.1	75	29.8
6.0	55	7.2	120	43.2
8.0	80	10.0	150	48.0

The average acceleration ratio achieved was 40.3 times.

According to the invention described above, the sample can be subjected to condensation of water vapor and can therefore be tested for weather resistance under nearly natural conditions. In spite of a large quantity of humid air supplied to the U.V. irradiation compartment for causing condensation, the invention precludes the cooling water jacket and the reflector surfaces from fogging, assuring weathering tests or pretests therefor within a very short period of time.

What is claimed is:

1. A weather resistance tester comprising:
  - (a) a U.V. radiation source comprising a lamp for generating U.V. radiation;
  - (b) a reflector having the U.V. source accommodated therein and an opening at a lower portion thereof for permitting the lamp to project U.V. radiation downward through the opening;
  - (c) a shield panel provided in the opening of the reflector and closing the opening for transmitting U.V. radiation therethrough and substantially blocking water vapor therefrom;
  - (d) a sample support disposed below the opening;
  - (e) means for adjusting the temperature in operative relation with the sample support;
  - (f) a compartment having accommodated therein the U.V. source, the reflector, the shield panel, the sample support and the temperature adjusting means;
  - (g) a recycling duct having an intake portion and an outlet portion connected to the compartment and provided with a heat exchanger and means for blowing air;
  - (h) a humidifier in operative relation with the sample support for providing a condensation condition therearound; and
  - (i) control means for giving operational instructions to the U.V. source, the temperature adjusting means, the heat exchanger, the blower means and the humidifier to maintain a sample on the sample support at a predetermined temperature while the lamp is on and to subject the sample to a condensation condition while the lamp is off.
2. The tester as defined in claim 1 wherein the shield panel is a thin plate of quartz glass.
3. A tester as defined in claim 2, wherein the thin plate of quartz glass is 1 to 4 mm in thickness.
4. The tester as defined in claim 1, wherein the shield panel comprises a thin plate of quartz glass having a thin plate of infrared absorption glass superposed thereon.
5. The tester as defined in claim 1, wherein the humidifier comprises a water tank, a heater provided

within the tank and operable in response to an instruction from the control means, and a water feeder for supplying water to the water tank and for maintaining the water at a constant level within the tank.

6. The tester as defined in claim 1, wherein the humidifier is disposed within the compartment and comprises a water tank, a heater provided within the tank and operable in response to an instruction from the control means, a water feeder for supplying a water to the tank and for maintaining the water at a constant level within the tank, and a humidifying duct extending from the water tank toward the sample support for guiding water vapor produced in the water tank to a location close to the sample on the sample support.

7. The tester as defined in claim 1, wherein the outlet portion of the recycling duct comprises an air recycling nozzle extending from a wall of the compartment toward the sample support for guiding recycle air to around the sample on the sample support.

8. The tester as defined in claim 1, wherein the temperature adjusting means comprises a temperature sensor mounted on an upper portion of the sample support for feeding a temperature signal to the control means, and a cooling water channel provided beneath the sample support.

9. The tester as defined in claim 1, wherein the heat exchanger comprises a heater and a refrigeration cycle evaporator.

10. The tester as defined in claim 1, wherein the lamp is a metal halide lamp for emitting U.V. radiation substantially in the wavelength range of from 300 to 400 nm.

11. The tester as defined in claim 1, wherein the reflector is substantially dome-shaped.

12. The tester as defined in claim 1, wherein the reflector comprises a substantially dome-shaped main reflecting member having two long sides and two short sides and an auxiliary reflecting member extending from the lower peripheral edge of the main reflecting member downward toward the sample support.

13. The tester as defined in claim 12, wherein the auxiliary reflecting member extends from the lower peripheral edge of the main reflecting member vertically downward at an angle with the vertical.

14. The tester as defined in claim 13, wherein the auxiliary reflecting member extends downwardly outward at an angle of 5 to 35 degrees with the vertical.

15. The tester as defined in claim 12, wherein the lamp is in the form of an elongated tube disposed horizontally, and the main reflecting member is elongated along the lamp and substantially parabolic in cross section, the auxiliary reflecting member comprising two lengthwise reflecting plates respectively extending downward from the lower ends of the two long sides of the main reflecting member.

16. The tester as defined in claim 15, wherein the reflecting surface of the main reflecting member is a semi-diffusion surface.

17. The tester as defined in claim 12, wherein the lamp is in the form of an elongated tube disposed horizontally, and the main reflecting member is elongated along the lamp and substantially parabolic in cross section, the auxiliary reflecting member comprising two widthwise reflecting plates respectively extending downward from the lower ends of the two short sides of the main reflecting member.